

Role of Teacher in Personal Learning Environments

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Abstract

This paper aims to discuss the changing roles and competencies of a teacher in context of prevailing developments accomplished by the vast availability of social software, which have made easy the development of Personal Learning Environments (PLEs). This has been accomplished by an in-depth review of the literature on teacher's socially situated competencies and roles with regard to the tasks and guidance they provide to students shape their PLEs. Review process provides an insight of PLE research studies, constructivist learning theories, and teacher changing roles. The results of this study outline the roles that portray the importance of teacher competencies as role in Planning and Design, Instruction and Learning, Communication and Interaction, Management and Administration, and Use of Technology.

Keywords

Personal learning environment; teacher roles; teacher competencies; learning technologies; collaborative learning

I. Introduction

Competencies of teacher are challenged (Downes, 2010; Minocha et al. 2011; Alvarez, 2009; Thach & Murphy, 1995; Shaikh & Khoja, 2011; Selvi 2010). There is a growing realization (e.g. see (Downes, 2010; Minocha et al. 2011; Alvarez, 2009; Thach & Murphy, 1995)) that traditional teaching competencies might not produce desired results in learner-controlled PLE settings. Focus on delivering content and information in the form of lecture-based environment is not as effective as when communication is mediated through technology. Teachers involved in teaching using face to face, distance, or online methods need help and support to identify new roles to be successful (Thach & Murphy, 1995). Besides this, it is also expected from 21st century teachers to collaborate with all sectors of the educational community in planning, managing, implementing, and evaluating programs (Shaikh & Khoja, 2011; Selvi 2010).

By choice and demand, technology is restructuring education, teaching, and learning, and affects them in ways that impact on everyone (Minocha et al. 2011). Teacher roles are changing rapidly than ever before, and new competencies are required all at a faster pace. McLoughlin & Lee (2010) and Drexler (2010) observed that free and easy availability of emerging learning technologies and social software have resulted complex and multifaceted challenges for teachers – including the provision of personalized learning experiences to students that cultivate their independent learning skills – besides scaffolding the learner reflection and the development of generic competencies. Väljataga & Laanpere (2010) found that the required pedagogical change involves not only importance of acknowledging learners' existing skills and the adoption of appropriate teaching approaches, and awareness of learners' experiences, as well as integrating social media in ways that enable active participation, social interaction, global networking, and community connections. Teacher may not be the only expert during students' learning processes, but he can still play key role in offering support in literacy skills and subject matter expertise, help them navigate the breadth of content and apply the technologies and tools properly (Drexler, 2010; Väljataga & Laanpere, 2010; Attwell, 2009).

Many research studies have established critical role of teacher in PLE design and implementation, but only some of them have focused on investigating teacher roles and competencies. Hence, we argue that future PLE research should look into this matter.

II. Current Review of Teacher Role in Personal Learning Environment

Our review of research studies and online resources with regard to teacher roles and competencies in PLE settings is divided into three areas, which are:

- a. Review of Personal Learning Environment studies
- b. Analysis of constructivist learning theories, and
- c. Examination of teacher changing roles and competencies

a. Review of Personal Learning Environment Studies

PLE represents a paradigm shift (Elliott, 2010); an easy-to-use environment based on the idea that learning is a continuous and ongoing process being provided by number of resources and individuals. It seeks to provide tools to support learning of an individual learner which takes place in many contexts and situations (Attwell, 2009). A PLE is a place where learner constructs knowledge socially with the help of knowledgeable peer mentors and teachers (McLoughlin & Lee, 2010 and Drexler, 2010). Here, the role of teacher is to insert scaffolding in learning plans of a learner, assist her in taking control of her learning, and help her realize her learning goals (Shaikh & Khoja, 2011). Väljataga & Laanpere (2010), Attwell (2009), and Wilson (2008) argue that an effective PLE 1) must address deeper educational issues, 2) support realization of learning objectives through the formulation, reuse, and repurposing of learning plans, 3) provide ways of controlling the technological infrastructure, 4) recognize teacher and learner inhabit the same

system, and 5) maintain the technological shift in the locus of control from institutional centralized delivery to learner-driven inquiry.

b. Promise of Personal Learning Environment

PLE is an environment where people and communities, and tools and resources, interact in a very flexible way. It promises to learner an important result of learning and the quest for independent learning that incorporates largest collection of tools under the control of an individual (Wilson, 2008 and Peña-López, 2010). PLE promises new teaching methodologies for successful learning to occur; where teacher ought to rethink her approaches, realign her methodologies, and move beyond restrictive, teacher-controlled environments to learner-driven collaborative spaces (Elliott, 2010).

i. What should be in a Personal Learning Environment

A PLE should contain a) content, b) context, c) connections, d) collection, e) communication, f) community, g) collaboration, and h) creation (WikiEducator, 2010). Peña-López (2010) argued that an effective PLE may contain accessing, aggregating, manipulating, and analyzing knowledge, or in other words, a PLE may provide the facilities of reading, noting, thinking, and writing. Wilson (2008) found that in order to facilitate learning processes, PLE should provide analysis, synthesis, abstraction, and critique components.

c. Constructivist Learning Theory

The constructivist model of learning is learner-driven, where learner learns best by actively constructing his own understanding about the World objects (Khoja, et al. 2009). It offers learning that occurs as the result of collaboration and social activity (Shaikh & Khoja, 2011). This constructivist theory describes that learners can learn things easily and in a better way by using their prior knowledge when they are asked to discover things by themselves rather than being told what to do next (Shaikh, 2009).

Constructivist teaching methods put responsibility on learners for learning to occur, where teacher's role is to help them manage their learning environment (Khoja, et al. 2009 and Shaikh, 2009). Våljataga & Laanpere (2010) found that in learner-centered approaches, teacher create an interesting phenomenon in order to motivate learners take ownership of the learning process, and produce best solution they can derive.

Design of PLE fosters meaningful learning. Jonassen et al. (2003) argues that "meaningful learning occurs with knowledge construction, not reproduction; conversation, not reception; articulation, not repetition; collaboration, not competition; and reflection, not prescription." Våljataga & Laanpere (2010) admonish that after a successful integration of PLE, some learners may still feel trouble getting started and explicating their objectives.

d. Teacher Changing Roles and Competencies

Teacher is responsible for operating educational system, hence, she needs strong and efficient professional competencies (Thach & Murphy, 1995). According to Shaikh (2009), it is necessary to redefine teacher competencies. Since teacher's main role is transferring changes into educational system, hence, teacher needs to excel in these new competencies that deal with these new changes effectively (Shaikh, 2009). Selvi (2010) suggested that teacher competencies should be reviewed consistently and in parallel with the changes, and reform studies through scientific methods. This study considers teacher's socially situated competencies – the ability to perform tasks and roles to the expected standard – and roles with regard to the tasks and guidance she provides to students shape their PLEs (McLoughlin & Lee, 2010). According to Drexler (2010) and

Williams (2003), nature of the tasks and the particularities of the learning environment are very important in teacher's socially-situated competencies. Olivier & Liber (2001) found that in socially situated learning environments, teacher's competencies must be related with context and, consequently, any such statements will be relative to these particular circumstances.

III. Methodology

In order to perceive teacher competencies and roles, we consider putting forward this preliminary theoretical study, centering on teacher roles and competencies in PLE settings.

A number of research papers and periodicals were reviewed that discussed the concept of teacher roles and competencies in PLE settings. The scientific output from the past 10 years was of particular interest, given that was the period when seminal work started in this research area, and when, for the first time, the term PLE was used in the literature by (Olivier & Liber, 2001) in 2001. Besides, the literature on teacher competencies and roles in face-to-face, distance education, online learning environments, and virtual learning environments was also comprehended. Special attention was paid to looking into specialist journals, books, and online resources of great scientific prestige (e.g. Australasian Journal of Educational Technology, British Journal of Educational Technology, American Educational Research Journal, IEEE Transactions on Learning Technologies, Interactive Learning Environments, Turkish Online Journal of Educational Technology, Educational Technology Research & Development, American Journal of Distance Education, Workplace Learning in Context, Pontydysgu, Educause, iCALT, eLearning Papers, The PLE Conference, etc.). The basic purpose of this study is to identify different roles of a teacher in such environment. This is very important as this study will help identifying different qualities and abilities to be developed by a teacher to work under this environment.

Teacher competencies are categorized as suggested by Alvarez et al. (2009), Williams (2003), and Trilling (2008) proposals. Categorizing the functions to relate them with their respective competencies also respected Alvarez et al. (2009) and Williams (2003).

IV. Results

PLE invite teacher to consider a role change and extend her craft to prepare students for the challenges of life beyond university. This allows students to develop lifelong learning skills which are paramount to self-direction and self-regulation (e.g. see Drexler, 2010; Våljataga & Laanpere, 2010; Attwell, 2009).

Despite the numerous studies on the design, pedagogies, and structure of a PLE, no competency study on teacher roles and competencies in PLE settings has been conducted to date. However, recent studies in the field of face-to-face learning, online learning, distance education, and network literacy have shed some light on critical components of teacher roles to include in a list of teacher competencies in PLE perspectives (Downes, 2010; Minocha et al. 2011; Alvarez, 2009; Thach & Murphy, 1995; Shaikh & Khoja, 2011; Selvi 2010).

The results of this study focus on the model suggested by us in [Fig 1]. The figure shows many roles of a teacher categorically grouped into five competencies.

a. Teacher Changing Roles

Setting up a PLE requires considerable planning. Teacher need to be innovative and knowledgeable regarding where and how to locate the resources he needs. He not only know clearly why the need of a PLE should be introduced to students, but also, how Web 2.0 and learning technologies can be incorporated with curriculum to make possible collaborative learning (Peña-López, 2010).

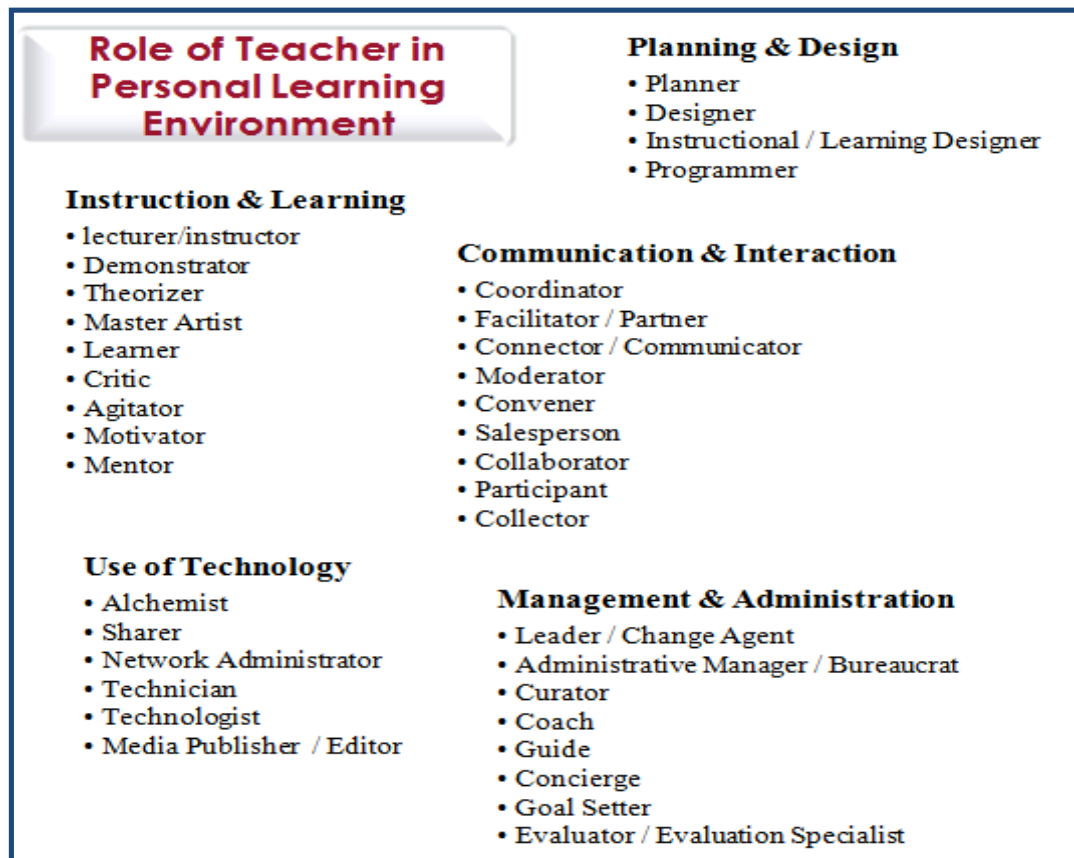


Fig 1. Teacher roles as per performing tasks

In PLE settings, a teacher ought to be an expert instructional designer (Downes, 2010 and Siemens & Tittenberger, 2009). According to Jonassen et al. (2003), instructional design plays vital role in designing the learning activities within a PLE. An instructional designer is a person who creates, browses, views, and edits learning designs used for the automatic creation of personalized learning activities for students. Kuo (2000) noted "instructional designer makes instructional decisions based on his or her judgment about what and how students should learn, what their learning contexts should be, what learning strategies they should employ, and how they should be assessed". Computer programming skills have also been rated high in digital network literacy phenomenon. Downes (2010) argued that "a programmer builds sequences into machines, manipulates symbols to produce meaning, calculates, orders, assembles, and manages social networks, [and] set ups wikis."

In teacher competency studies, lecturing and learning are two learning tasks that surface repeatedly. Several researchers, viz. Downes (2010), Minocha et al. (2011), Alvarez et al. (2009), and Thach & Murphy (1995) argue that a lecturer organizes larger bodies of thought into a comprehensible whole, and employs the oratory skills and exposition to make the complex clear for students. Siemens & Tittenberger (2009) observed that a lecturer or instructor must be an expert learner.

Related to lecturing and instructing is the very critical competency of theorizing and demonstrating. A demonstrator uses some equipment, models and simulations, or movies, to tell stories, while a theorizer, as noted by Downes (2010), "leads students develop world views, find the underlying cause or meaning of things, create order out of what appears to be chaos, [and] help them remember things by giving a single structure."

In PLE settings, teacher ought to motivate learners to take ownership and control of their learning processes, and mentor them to realize their goals towards success (Kuo, 2000; Mullen, 2010;

Arthur, 2009). Kuo (2000) and Mullen (2010) advocate that mentor has a versatile personality, ranging from sharp critic to enthusiast coach. Mullen (2010) noted in her study "not everyone can be a mentor, not every mentor can take on too many prodigies, and of all the roles described here, that of the mentor is most likely to be honorary or voluntary." The need of agitator and master artist has also been discussed in the PLE settings. The former "creates the seed of doubt, the sense of wonder, the feeling of urgency, and the cry of outrage" (Downes, 2010), while the latter "observes the activities of students and can draw attention to innovative approaches" (Siemens & Tittenberger, 2009).

Instructive and cognitive skills raise new requirements to teacher competencies in knowledge and skill level. According to Mullen (2010), "teachers need to get accustomed to and trained on their new role as partners and facilitators in learning processes, rather than lecturers". Minocha et al. (2011) add that one of the changing roles that this new learning phenomenon has created for teachers is that of a facilitator who help learners adapt their PLEs, scaffold learning, and manage the content before it becomes more complex (Global Teacher, 2010). Attwell (2009) stresses that, in PLE process, coordination, collaboration, cooperation, communication, connection, and integration between teacher and students is important. Peña-López (2010) puts emphasis on teacher's coordination role and notes that coordinator supplies a framework in which learners collaborate, connect, and integrate with each other more flexibly. Alvarez et al. (2009) and Elliott (2010) argue that communicator or connector is the person who draws associations among distributed links and applications in order to infer latent factors and hidden relationships. Downes (2010) noted "the connector is the person who links or bridges distinct communities with one another, allowing ideas to flow from art to engineering, from database design to flower arranging."

Many studies outline how teacher ought to facilitate the process of learning within PLE and act as moderator, convener, collector, and salesperson (Minocha et al. 2011; Downes, 2010; Mullen 2010; Global Teacher, 2010; Arthur, 2009; Alvarez, 2009; Thach & Murphy, 1995). Drexler (2010) asserts that "teachers have always been collectors, from the days when they bring stacks of old magazines into class to the modern era as they share links, resources, new faces, and new names." In many studies (e.g. see Downes, 2010; Minocha et al. 2011; Alvarez, 2009; Thach & Murphy, 1995; McLoughlin & Lee, 2010; Mullen 2010; Arthur, 2009; Global Teacher, 2010), teacher is seen as a role model, leader, manager, and change agent. McLoughlin (2010) observed that teachers are the administrative managers who manage classroom computing resources and finances, organize accountability procedures, and maintain systemic coherence. Trilling (2008) found teacher a curator and advocates that "he should balance the freedom of individual learners with the thoughtful interpretation of the subject being explored, and create spaces in which knowledge can be created, explored, and connected." Sandy (2005) termed teacher as a leader in her draft paper, and noted "the effective teacher must be a leader who can inspire and influence students through expert and referent power but never coercive power. This teacher knows his subject well and is kind and respectful toward his students. He also has high standards and expectations coexisting with encouragement, support, and flexibility. This teacher empowers students and gets them to do things of which they did not think they were capable. This teacher has students who surpass him."

Mullen (2010) and McLoughlin & Lee (2010) suggested in their studies that PLE demands teacher to act as a(n) a) coach, who these days is no longer the sage on the stage, but instead provides learners with access to a variety of independent learning experiences, b) concierge, who directs learners to learning opportunities that they mean to be aware of, serves to provide a form of soft guidance, and permits them to explore on their own, c) evaluator, who not only assesses declarative knowledge and compositional ability, but the instinct, reaction, sociability, habit, and attitude of students in relation to their learning, and d) goal setter, who assists learners in taking control of their learning and education, and scaffolds them to realize their goals.

Related to managerial is a critical role of technologist or digital technology expert. This includes tasks that are performed by a a) sharer, who shares cultures, concepts, ideas, materials, mailing lists, links, and creates and manages e-portfolios (Downes, 2010 and Arthur, 2009), b) technologist, who transfers technical knowledge to students, and teach them how to tackle with complex technological issues (Downes, 2010; Minocha et al. 2011; Alvarez, 2009; Thach & Murphy, 1995); c) technician, who enables students to be knowledgeable about learning resources (Mullen, 2010; Arthur, 2009; Global Teacher, 2010); d) network administrator, who helps students master in the skills required to construct learning networks, evaluates their effectiveness, and work

within a fluid structure (Downes, 2010); e) editor or media publisher, who edits objects for style, clarity, grammar, and structure (Downes, 2010; Trilling, 2008; Siemens & Tittenberger, 2009); and f) alchemist, who mixes the ordinary and unexciting things into some innovative and surprising master pieces, analyzes rhythms in dissimilar materials, and brings them together to bring them out (Downes, 2010 and Trilling, 2008).

V. Discussion

Following the same order as teacher competencies and roles discussed in the results section, we now present our findings. Considering the significant role of teacher in PLE settings, we have grouped teacher competencies around five performing roles according to the nature of tasks with which they are associated as shown in [Fig 1].

a. Planning and Design (Designing/Planning Role)

The planning and design aspect of teacher competencies and roles is related with setting up students' PLEs, designing learning activities, creating learning spaces, making instructional decisions, and solving programming problems. Tasks include: plan and prepare course design, promote teamwork in design process, define procedures of instructional design, conduct needs assessment of students, present content and questions, in-line existing courses with PLE requirements, creation of online interactive content, ensure course design works with technology, etc. Roles identified: planner, designer, instructional/learning designer, programmer.

b. Instruction and Learning (Instructive/Cognitive Role)

This role relates to instructive and cognitive aspects of instruction in PLE settings. It consists mental processes of teaching and learning, abstraction and generalization, information storage, motivation, and mentoring, etc. Tasks include: tutoring, learning guidance and evaluation, competency in the subject matter, provide students with timely feedback, validate knowledge acquired by the process of collaborative learning, initiate and maintain interactive discussions, monitor and evaluate students' performance, enthusiast about teaching, well-versed with collaborative, constructive, reflective, active, and authentic learning, facilitate information presentation, monitor and evaluate students' performance, establish learning outcomes, advice and counsel students, etc. Roles identified: lecturer/instructor, demonstrator, theorizer, master artist, learner, critic, agitator, motivator, mentor.

c. Communication and Interaction (Social Role)

The communication and interaction aspect of teacher competencies and roles is related with learners' relationships with peers, other knowledgeable ones, and teachers. Tasks include: managing healthy and cooperative interactions, identifying areas of consensus, analyzing patterns of cooperation, diagnosing misconceptions, seeking consensus, encourage peer learning and social links, understanding, encouraging, initiating collaborative learning activities, acknowledging or reinforcing student contributions, fostering learning and setting climate for learning, ensuring participation, prompting and controlling discussion, assessing the efficacy of learning processes, etc. Roles identified: coordinator, facilitator, partner, connector/communicator, moderator, convener, salesperson, collaborator, participant, collector.

d. Management and Administration (Managerial Role)

Teacher's management role is related with competencies that allow her to develop and adapt managed actions such as: motivation and learning needs of students, quickly responding to students' expectations, and channelizing spaces of communication and voluntary participation. Tasks include: inspire and influence students through expert and referent power, command on subject matter, kind and respectful toward students, encourage and support students in all matters, flexible, having good listening skills, empower students to do things of which they did not think they were capable, etc. Roles identified: leader/change agent, administrative

manager/bureaucrat, curator, coach, guide, concierge, goal setter, evaluator.

e. Use of Technology (Technologist Role)

Technological role relates to technical knowledge of support services, social computing applications, open access and proprietary software, data analysis and design skills. Tasks include: smooth transfer of knowledge, sharing online file areas, maintaining and managing learning environments within and outside the classrooms, managing shared mailboxes, functionalities in the lecture, learning platform tools use for tutoring, authoring, and annotations, styles of face-to-face, virtual, and online communication, knowledge of web-based teaching and e-learning paradigms and systems, PLEs, etc. Roles identified: alchemist, sharer, network administrator, technician, technologist, media publisher/editor.

VI. Conclusion

This study contributes and clarifies to the growing body of research on teacher competencies and roles in PLE settings, while linking them with the notion of situated learning. The decision of adopting applications, the development of matching learning activities, the moderation and facilitation needed, and teacher's own confidence level in integrating these web 2.0 based learning technologies in instruction are all roles and activities that directly contribute to the successful implementation of PLEs.

PLE construction process requires equal participation of both students and the teachers, hence, a teacher may not necessarily perform all the roles, but, rather, she interact with students in general. Yet, in any case, teacher's required competencies depend not only on the role being performed, but, also on the nature and complexity of the tasks they are supposed to carry out.

a. Recommendations for Future Research

Recommendations for future research include validation of results of this study from learning technologies practitioners, students, teachers, and the people involved in PLE research within academia, business, and industry, with survey or focused research methodology, in order to develop consensus over teacher's PLE competencies and roles. Since the scope of this study was limited to only identifying teacher's perceived roles and competencies, it does not explore the criticality of the competencies for different types of learning technologies, approaches, and contexts, hence, it is recommended that further research may to be carried out in these dimensions. And due to the quick changes in learning technologies and social software, the enormous growth of social networking and collaboration, and the fact that this is the first literature review of its kind, it is recommended that similar studies may be repeated every so often to ensure relevance of teacher roles and competencies in PLE settings.

Finally, it is also very important for future research on PLEs to consider the importance of teacher as part of PLE implementation, and to recognize the diversity of roles teacher perform in this context. Although we have focused on higher education in this study, the issues that we have raised are also applicable for teacher roles in further and school education where students are being familiarized with PLE conception, social software is being integrated in teaching and learning, and research to investigate the potential benefits of these emerging learning technologies has been commissioned.

References

- Alvarez, I. Guasch, T. and Espasa, A. 2009. University teacher roles and competencies in online learning environments: a theoretical analysis of teaching and learning practices, *European Journal of Teacher Education*, 32: 3, 321 – 336
- Arthur, E. 2009. Experience the digital education revolution, accessed December 10, 2010, from: <http://www.convergemag.com/edtech/Experience-the-Digital-Education-Revolution.html?page=3>

- Attwell, G. 2009. Personal Learning Environments: The future of education, SlideCast, accessed December 2010, from: <http://www.pontydysgu.org/2009/01/personal-learning-environments-the-slidecast/>
- Downes, S. 2010. The role of educator in a PLE world, Stephen's web, accessed November 10, 2010, from <http://www.downes.ca/post/54312>
- Drexler, W. 2010. The networked student model for construction of personal learning environments: balancing teacher control and student autonomy, *Australasian Journal of Educational Technology*, 26(3), 369-385.
- Elliott, C. 2010. We are not alone: the power of Personal Learning Networks, in *Synergy*, 7(1), 47 - 50
- Global Teacher – A community for victorian teachers and their students, 2010, accessed December 10, 2010, from: <http://globalteacher.org.au/>
- Jonassen, D. H. Howland, J. Moore, J. and Marra, R. M. 2003. Learning to solve problems with technology: a constructivist perspective, 2nd ed., Prentice Hall
- Khoja, S. A. Sana, F. Abid, K. and Rehman, A. A. 2009. Implementing Constructivist Pedagogical Model in Dynamic Distance Learning Framework, *Wireless Networks, Information Processing Systems, Com. Comp. Info. Sci.*, vol. 20, 2009, 191-201
- Kuo, K. 2000. The power of mentoring, *Educational Review*, vol. 35(2), 8-11
- McLoughlin, C. and Lee, M. J. W. 2010. Personalised and self-regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. *Australasian Journal of Educational Technology*, 26(1), 28-43. <http://www.ascilite.org.au/ajet/ajet26/mcloughlin.html>
- Minocha, S., Schroeder, A. and Schneider, C. 2011. Role of the educator in social software initiatives in further and higher education: A conceptualisation and research agenda. *British Journal of Educational Technology*, 42: no. doi: 10.1111/j.1467-8535.2010.01131.x
- Mullen, C. A. 2010. Themed issue: fostering a mentoring mindset across teaching and learning contexts, *Mentoring and Tutoring: Partnership in Learning*, vol. 18(1), 1-4.
- Olivier, B. and Liber, O. 2001. Lifelong Learning: the need for portable Personal Learning Environments and supporting interoperability standards, *JISC Center for Educational Technology, Interoperability Standards, Bolton Institute*
- Peña-López, I. 2010. Personal Learning Environments: blurring the edges of formal and informal learning, *Working Paper*
- Sandy, L. R. 2005. The Effective Teacher, accessed October 25, 2011, from: <http://oz.plymouth.edu/~lsandy/effective.html>
- Selvi, K. 2010. Teachers' competencies, *Cultura. International Journal of Philosophy of Culture and Axiology*, vol. 7(1), 167-175.
- Shaikh, Z. A. 2009. ZPD incidence development strategy for demand of ICTs in higher education institutes of Pakistan, in Proceedings of 3rd IEEE Symposium of Intelligent Information Technology Applications (IITA'09), IEEE Press, 661-664
- Shaikh, Z. A. and Khoja, S. A. 2011. Role of ICT in shaping the future of Pakistani higher education system, *Turkish Online Journal of Educational Technology*, vol. 10(1), 149 - 161
- Siemens, G. and Tittenberger, P. 2009. *Handbook of emerging technologies for learning*
- Thach, E. C. and Murphy, K. L. 1995. Competencies for distance education professionals, *Educational Technology Research & Development*, vol. 43(1), 57-79
- Trilling, B. 2008. 21st century learning, the new balance, in Proceedings of International Conference on Teaching and Learning with Technology, Singapore
- Väljataga, T. and Laanpere, M. 2010. Learner control and personal learning environment: a challenge for instructional design, *Interactive Learning Environments*, vol. 18(3), 277-291
- WikiEducator. Learning objects, personal learning environments, study guides, accessed October 15, 2010.

Williams, P. E. 2003. Roles and competences for distance education programs in higher institutions, *American Journal of Distance Education*, vol. 17(1), 45–57

Wilson, S. 2008. Patterns of Personal Learning Environments, *Interactive Learning Environments*, 16(1), 17-34, doi: 10.1080/10494820701772660

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